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DEPARTMENT OF AGRICULTURE
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SEED REPORT

1918

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BUREAU OF CHEMISTRY

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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE

Bureau of Chemistry

Hon. Charles E. Patton, Harrisburg, Pa., January 2, 1919.
Secretary of Agriculture, Harrisburg, Pa.

Dear Sir:

I have the honor to transmit herewith for your approval a report showing the results of the work accomplished during 1918, in testing the purity of Seeds, as provided by the Law regulating the sale of Agricultural Seeds.

It is recommended that this report be published in bulletin form for distribution.

Very respectfully,

JAMES W. KELLOGG,
Chief Chemist.

Bulletin No. 322

SEED REPORT

1918

INTRODUCTION

This report shows the results of tests for the purity of official and special samples of seeds during 1918, as required by the provisions of the Seed Law. Special Agents of the Department obtained, largely during the Spring season, 150 official samples representing the quality of agricultural seed found offered for sale and there were 61 special samples submitted for purity tests by local seedsmen and dealers. Each sample was carefully examined and tested for purity by the Seed Analyst, Howard E. Gensler, assisted by Ruth I. Mentzer, determination being made for the percentages of "Pure Seed," "Foreign Seed," "Inert Matter" and for the presence of dodder and Canada thistle. The Law establishes standards of purity for 20 different kinds of seeds from 75% to 97% and the seed of each of these classes coming within the provisions of the Law are required to meet their respective standards before being offered for sale.

The greater proportion of the samples examined were those of red clover, timothy grass, alsike clover and alfalfa and the averages of the results secured, especially in the case of the official samples, were well above the required standards. Of the official samples there were only 4 of red clover and 3 of alsike clover which tested lower than the standards, thus indicating, judging from the year's work, that the seed sold in the State was of good quality and up to requirements. A study of the results of the purity tests, which have been tabulated and included in the following pages, will indicate that these standards should be raised for the purpose of improving the quality of the seed sold in the State. One of the most important phases of seed inspection work is the information obtained as a result of germination tests or tests made in the Laboratory, approximating as near as possible field conditions, to determine the percentage of seed which is sound and which will germinate. While standards of purity are necessary, in order to require that seeds be as

pure as possible and true to name, it is of greater importance that such seed will germinate under proper conditions. It may happen that seed will be practically pure, as far as there being but little foreign seed and inert matter present, but the percentage of germination may be so low as to make the lot of seed in question valueless. As the present Seed Law does not require germination tests to be made and as accordingly the Laboratory has not been equipped for this work, no results of germination tests are included in this report.

In the following pages will be found the standards of purity; 5 plates showing the noxious weed seeds found in farm or agricultural seeds; directions for the sending of special samples for purity tests; the results of tests for purity on special samples, Table I, average purity of official samples, Table II; a discussion with respect to the results of inspection and the results of purity tests on official samples, Table III.

STANDARDS OF PURITY

The standards of purity established by the Seed Law include twenty kinds of seeds which, before being offered for sale, should meet the standards, ranging from 75% to 97% as follows:—

Medium Red Clover,	Trifolium pratense,	97 %
Mammoth Red Clover,	Trifolium pratense,	97 %
Crimson Clover,	Trifolium incarnatum,	97 %
Alfalfa,	Madicago sativa,	97 %
Timothy-Grass,	Phleum pratense,	97 %
Barley,	Hordeum vulgare,	97 %
Spelt,	Triticum aestivum Spelta,	97 %
Wheat,	Triticum aestivum,	97 %
Buckwheat,	Fagopyrum Fagopyrum,	97 %
Oats,	Avena Sativa,	97 %
Rye,	Secale cereale,	97 %
Alsike Clover,	Trifolium hybridum,	95 %
Perennial Rye-Grass,	Lolium perenne,	95 %
German Millet,	Chaetochla italica,	95 %
Hungarian Millet,	Chaetochla italica,	95 %
White Clover,	Trifolium repens,	90 %
Redtop Grass, (solid or hulled).	Agrostis alba,	85 %
Canadian Blue Grass,	Poa Compressa,	75 %
Orchard Grass,	Dactylis glomerata,	75 %
Kentucky Blue-Grass,	Poa pratensis,	75 %
Redtop (unhulled),	Agrostis alba or palustris,	75 %

Dodder and Canada thistle are prohibited from being present in excess of 1 seed in 3,000.

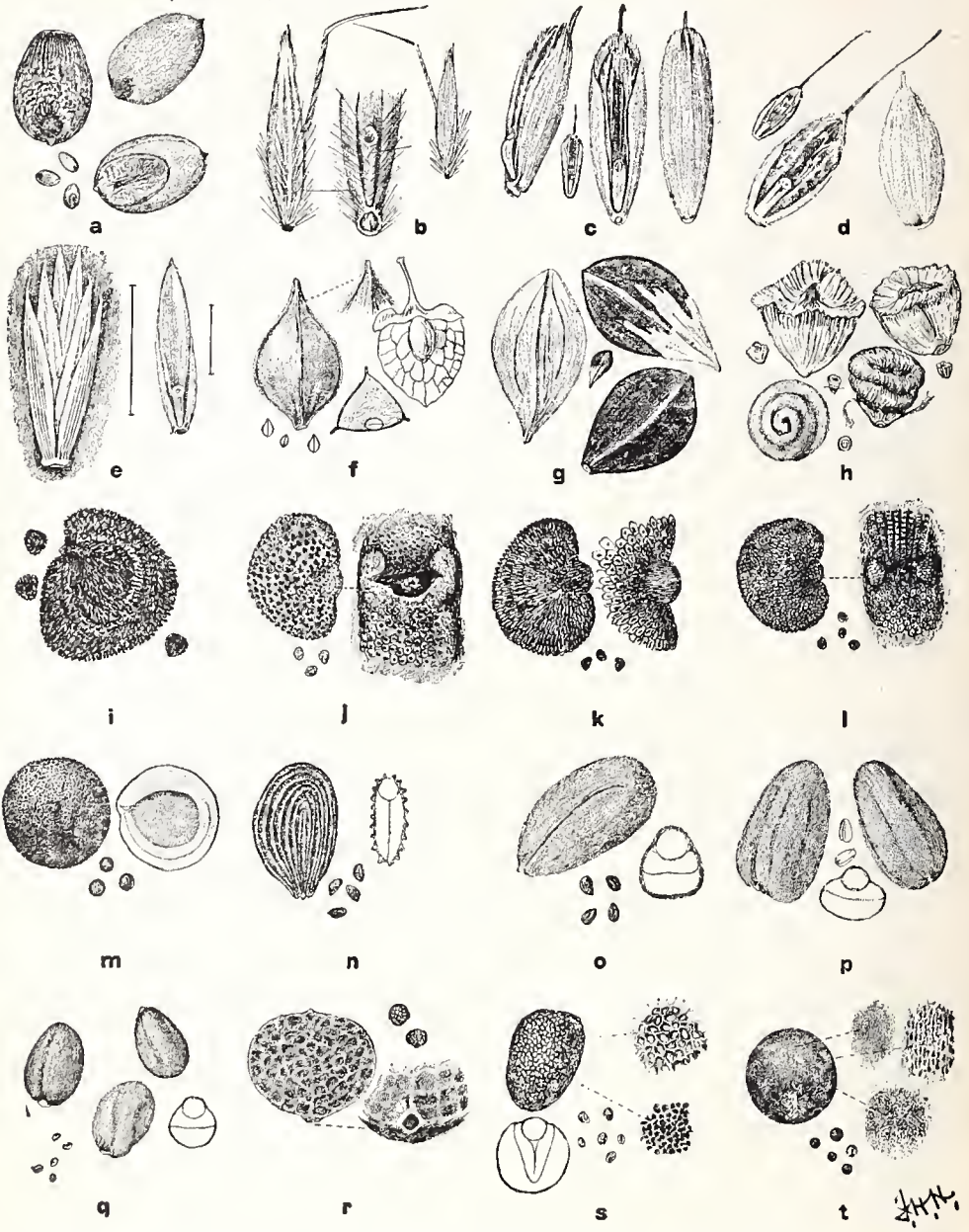
NOXIOUS WEED SEEDS FOUND IN FARM SEEDS

The percentage of "Foreign Seed," determined in testing seeds for purity denotes all seeds other than those represented by the name of the seed in question and includes the noxious weed seeds commonly found present in the various kinds of agricultural seeds. Frequently these foreign seeds are present in sufficient amounts to cause not only the samples under examination to fall below the required standards, but to promote the propagation of pernicious weeds which produce an inferior crop and considerable damage. Some of these foreign seeds are well known and can be easily detected while others are more uncommon and can only be identified by a seed expert.

In the Seed Report for 1915, illustrations were included showing the characteristic appearance of 100 kinds of noxious and common weed seeds found in agricultural seeds. Because of many requests for the report furnishing this information, it has appeared desirable to include these illustrations in this report. The plates from which they were printed were prepared by Prof. F. H. Hillman, Botanist of the Seed Laboratory of the United States Department of Agriculture, and through his kindness in permitting the Department to use these plates it is possible for us to again include these illustrations for the purpose of assisting those interested, in becoming familiar with the various kinds of foreign and noxious seeds. In the illustrations which follow, a letter under each kind of seed is shown and below will be found the corresponding common names or synonyms, botanical names and a brief description of each.

PLATE 1.—NOXIOUS WEED SEEDS FOUND IN FARM SEEDS.

(Loaned by Bureau of Plant Industry, U. S. Dept. of Ag.)

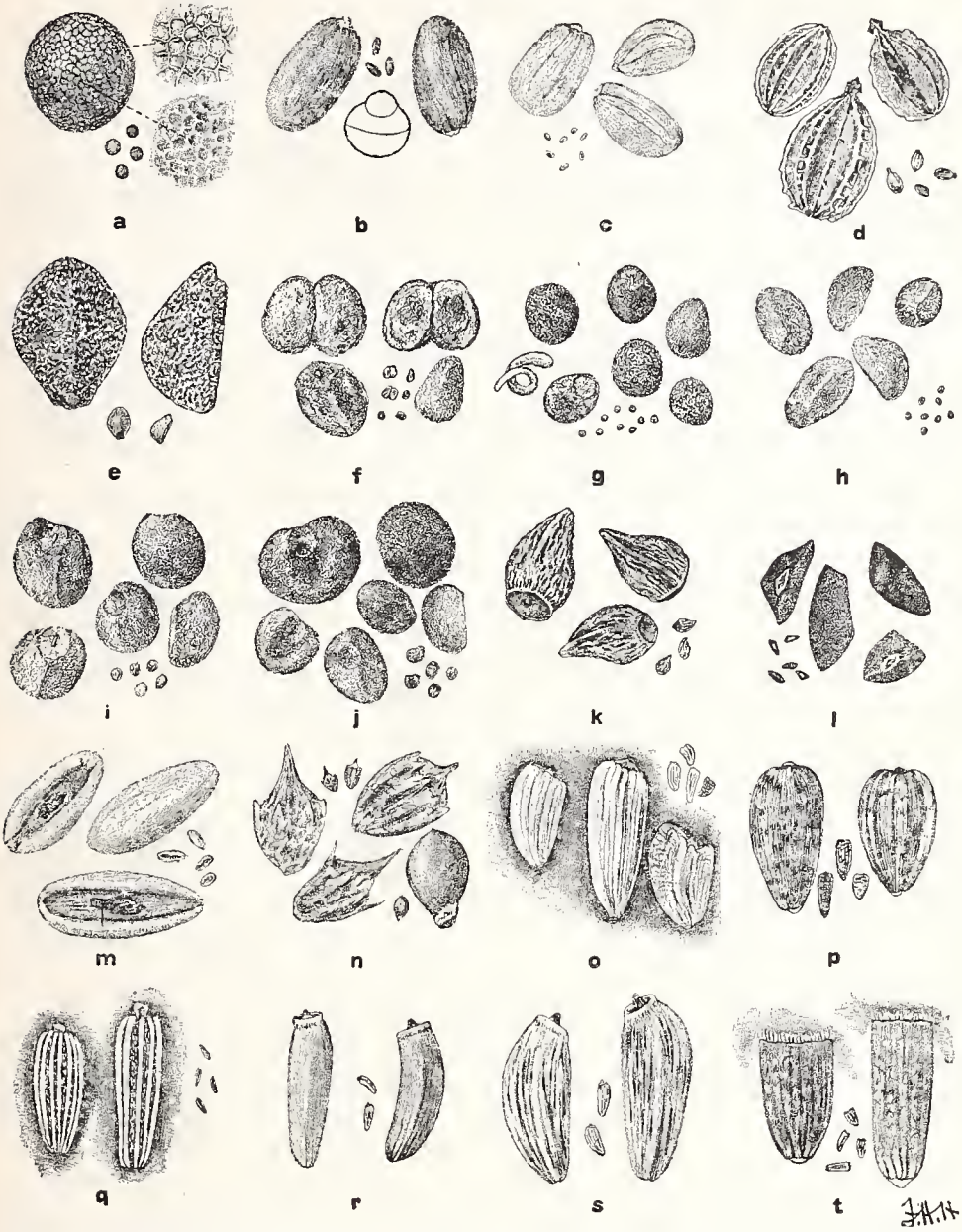


Common and Botanical Names. 1=Color. 2=Appearance Under Low-power Lens.

a. Sandbur, Cenchrus tribuloides, (1) Light brown or straw, (2) Dull.
b. Wild oat, Avena fatua, (1) Straw or brown, (2) Smooth.
c. Chess or cheat, Bromus secalinus, (1) Straw, (2) Somewhat wrinkled.
d. Darnel, Lolium temulentum, (1) Straw or brown, (2) Smooth; sometimes shiny.
e. Quack-grass, Agropyron repens, (1) Light yellow, sometimes greenish, (2) Dull.
f. Curled dock, Rumex crispus, (1) Reddish brown, (2) Smooth and shining.
g. Black bindweed, Polygonum convolvulus, (1) Brown, straw or greenish in coat; out of coat, black and (2) somewhat shiny.
h. Russian thistle, Salsola tragus, (1) Grey or brown.
i. Corncockle, Agrostemma githago, (1) Black or brown, (2) Fine spines or tubercles.
j. White campion, Lychnis alba, (1) Grey, yellowish grey or reddish grey, (2) Fine spines or tubercles.
k. Bladder campion, Silene vulgaris, (1) Brown or approaching black, (2) Fine spines or tubercles.
l. Night-flowering catchfly, Silene noctiflora, (1) Similar to that of "j," (2) Fine spines or tubercles.
m. Cow cockle, Vaccaria vaccaria, (1) Black, (2) Faintly warted.
n. Pennycress, Thlaspi arvense, (1) Reddish brown, (2) concentric shining ridges.
o. Field peppergrass, Lepidium campestre, (1) Reddish Brown, (2) Dull or finely granular.
p. Large-fruited false flax, Camelina sativa, (1) Light yellow or orange, (2) Waxy.
q. Small-fruited false flax, Camelina microcarpa, (1) Dark red, (2) Dull; finely granular.
r. Ball mustard, Neslia paniculata, (1) Straw colored or brown, (2) Network of ridges.
s. Back mustard, Brassica nigra, (1) Reddish or dark brown, (2) Network of ridges.
t. Charlock, Brassica arvensis, (1) Black or reddish brown, (2) Dull; grey lustre.

PLATE 2.—NOXIOUS WEED SEEDS FOUND IN FARM SEEDS.

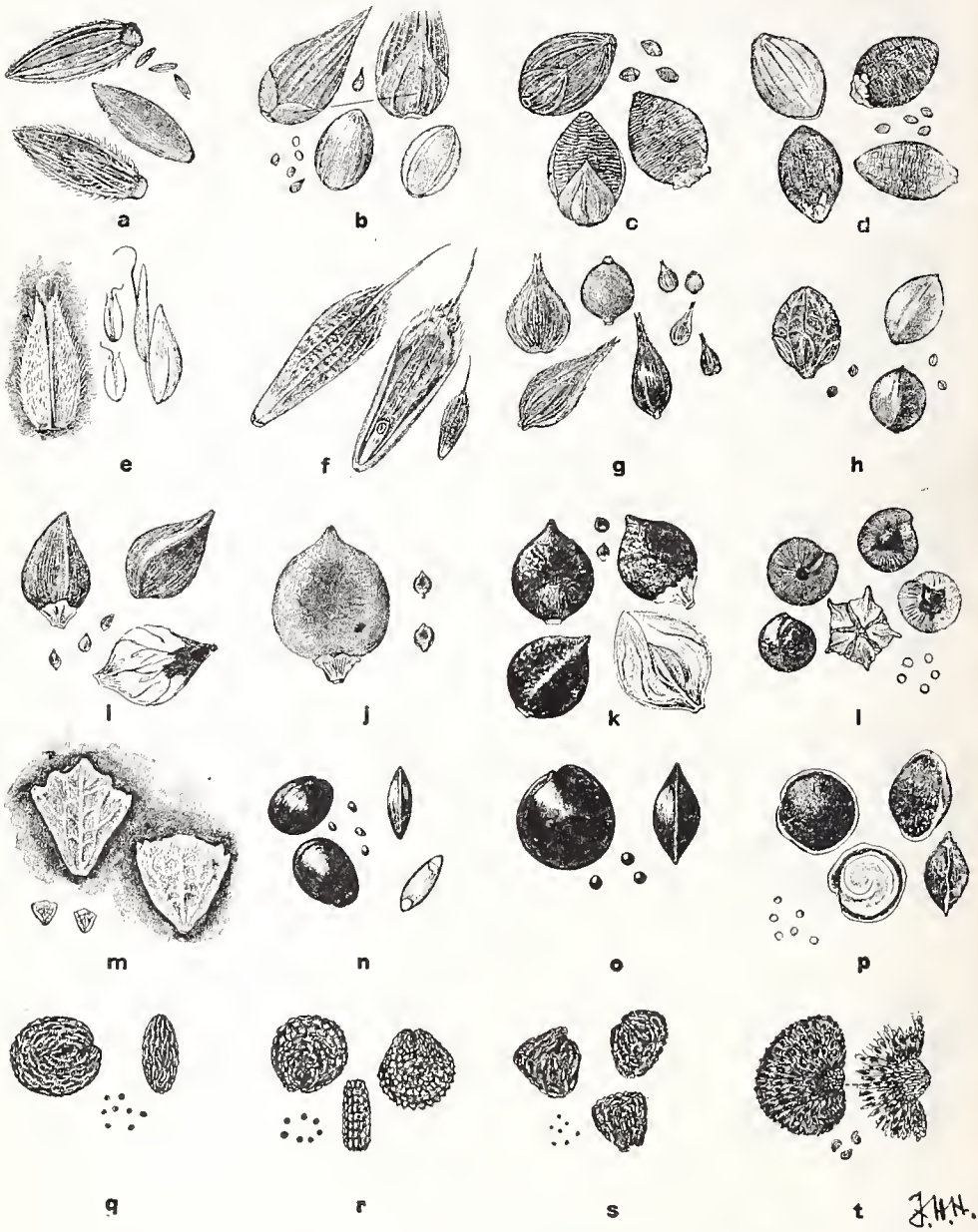
(Loaned by Bureau of Plant Industry, U. S. Dept. of Ag.)



Common and Botanical Names. 1=Color. 2=Appearance Under Low-power Lens.

a. Indian mustard, Brassica juncea, (1) Reddish brown, (2) Network of ridges.
b. Hare's-ear mustard, Conringia orientalis, (1) Brown or reddish brown, (2) Granular.
c. Tumbling mustard, Sisymbrium altissimum, (1) Orange or dull brown, (2) Waxy.
d. Wild carrot, Daucus carota, (1) Light brown, (2) Ridges with spines.
e. Field bindweed, Convolvulus arvensis, (1) Dull brown, (2) Roughened.
f. Flax dodded, Cuscuta epilinum, (1) Grey or brownish grey, (2) Granular.
g. Clover dodder, Cuscuta epithymum, (1) Grey or brown, (2) Granular.
h. Small-seeded alfalfa dodder, Cuscuta planiflora, (1) Yellowish, greenish or purplish, (2) Roughened or granular.
i. Field dodder, Cusuta arvensis, (1) Orange or yellowish brown, (2) Dull or granular.
j. Large-seeded alfalfa dodder, Cuscuta indecora, (1) Grey, greenish or brown, (2) Roughened or granular.
k. Corn gromwell, Lithospermum arvense, (1) Grey or brown, (2) Roughened or warty.
l. Rugel's plaintain, Plantago Rugelii, (1) Black, (2) Dull with minute glistening points.
m. Buckhorn plaintain, Plantago lanceolata, (1) Brown or amber, (2) Shiny on concave side; dull in groove.
n. Ragweed, Ambrosia artemisiaefolia, (1) Light grey or brown, (2) Irregularly ridged.
o. Gum-plant, Grindelia squarrosa, (1) Whitish or straw, (2) Vertically wrinkled.
p. Spurry, Spergula arvensis, (1) Dull black, encircled by light colored rim, (2) Finely verticle wrinkles.
q. Oxeye daisy, Chrysanthemum leucanthemum, (1) Brown or black with ten white vertical ribs.
r. Canada thistle, Carduus arvensis, (1) Light or dark bronze, (2) Smooth.
s. Bull thistle, Carduus lanceolatus, (1) Light grey or brown with darker vertical stripings, (2) Dull.
t. Chicory, Cichorinm intybus, (1) Brown or straw with dark spots, (2) Vertically wrinkled; finely webbed.

PLATE 3.—COMMON WEED SEEDS FOUND IN FARM SEEDS.
(Loaned by Bureau of Plant Industry, U. S. Dept. of Ag.)



Common and Botanical Names. 1=Color. 2=Appearance Under Low-power Lens.

a. Crab-grass, Syntherisma sanguinalis, (1) Straw green, brown or purplish.
b. Witch-grass, Panicum capillare, (1) Straw or olive green, (2) Shining.
c. Yellow foxtail, Chactochloa glauca, (1) Free from chaff, light or dark green, (2) Ridged crosswise.
d. Green foxtail, Chaetochloa viridis, (1) Free from chaff; straw or brown, sometimes mottled, (2) Ridged crosswise.
e. Velvet grass, Holcus lanatus, (1) chaff, straw, (2) Having fine, stiffish hairs.
f. Soft chess, Bromus hordeaceus, (1) Straw, (2) Usually wrinkled.
g. Sedge, Carex sp., (1) Free from chaffy hull, light brown, (2) Smooth.
h. Sorrel, Rumex acetosella, (1) Free from hull, reddish brown, (2) Smooth and shining.
i. Knotwood, Polygnum aviculare, (1) Free from covering, reddisb brown, (2) Dull.
j. Pale smartweed, Polygonum lapathifolium, (1) Chestnut brown, (2) Shining.
k. Lady's-thumb, Polygonum persicaria, (1) Black or reddish black, (2) Shining.
l. Lamb's-quarters, Chenopodium album, (1) Dark brown or black, (2) Shining.
m. Wild saltbush, Atriplex truncata, (1) Straw, (2) Veined into an imperfect network.
n. Rough pigweed, Amaranthus retroflexus, (1) Black, (2) Highly polished.
o. Spreading amaranth, Amaranthus blitoides, (1) Black, (2) Highly polished.
p. Spurry Spergula arvensis. (1) Dull black, encircled by light colored rim, (2) Finely warted.
q. Chickweed, Alsine graminea, (1) Reddish brown or brown, (2) Crinkled appearance, caused by fine ridges.
r. Chickweed, Alsine media, (1) Reddish brown or brown, (2) Stitched appearance, caused by tubercles.
s. Mouse-ear chickweed, Cerastium vulgatum, (1) Reddish brown, (2) Tubercled.
t. Forked catchfly, Silene dichotoma, (1) Reddish brown, (2) fine spines or tubercles.

PLATE 4.—COMMON WEED SEEDS FOUND IN FARM SEEDS.

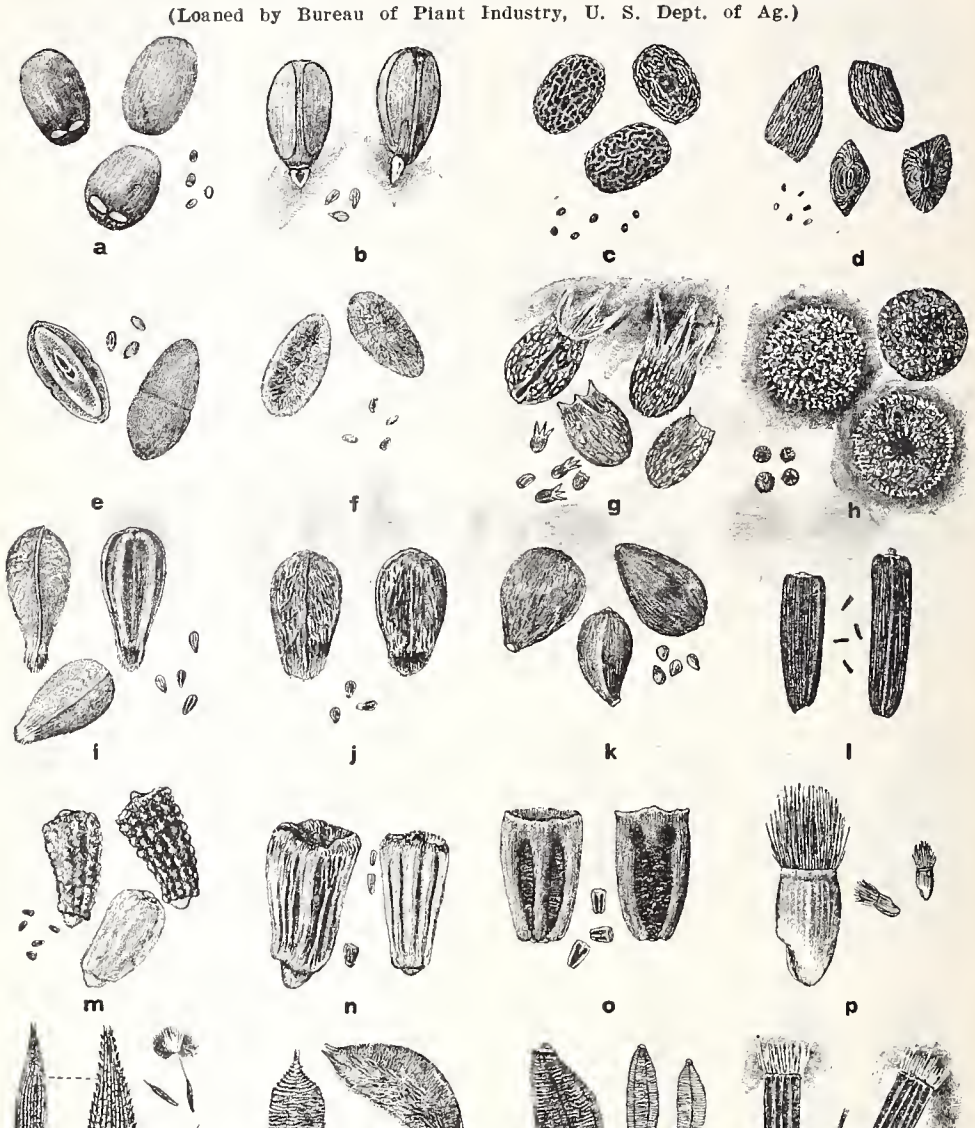
(Loaned by Bureau of Plant Industry, U. S. Dept. of Ag.)

Common and Botanical Names. 1=Color. 2=Appearance Under Low-power Lens.

a. Creeping buttercup, Ranunculus repens, (1) Brown or reddish-brown, (2) Dull.
b. Peppergrass, Lepidium virginicum, (1) Reddish yellow with papery rim, (2) Waxy or dull.
c. Shepherd's-purse, Bursa bursa-pastoris, (1) Reddish yellow, (2) Waxy or dull.
d. Cinquefoil, Potentilla monspeliensis, (1) Straw or brown, (2) With curved, forked ridges.
e. Hop clover, Trifolium procumbens, (1) Yellowish, (2) Shining.
f. Yellow trefoil, Medicago lupulina, (1) Yellowish brown or tinged with green, (2) Smooth.
g. Bird's-foot trefoil, Lotus corniculatus, (1) Brown and mottled, (2) Smooth.
h. Wild Geranium (cut-leaved crane's bill), Geranium dissectum, (1) and (2) Brown with light network.
i. Wild Geranium (Dove's foot crane's bill), Geranium molle, (1) and (2) Often with a brown, ridged hull.
j. Wild Geranium (Small-flowered crane's bill), Geranium pusillum (1) Reddish brown, (2) Smooth.
k. Alfilaria, Erodium cicutarium, (1) Seeds proper, brown, (2) Smooth.
l. Spurge, Euphorbia nutans, (1) Steel-gray or brown, (2) Ridged into four angles; faces wrinkled.
m. Spiny sida, Sida spinosa, (1) Brown, (2) Dull.
n. Evening primrose, Onagra biennis, (1) Reddish brown, (2) Presenting wrinkled or shrivelled appearance.
o. Red pimpernel, Anagallis arvensis, (1) Reddish brown, (2) Finely roughened.
p. Sticktight, Lappula lappula, (1) Grey or brown, (2) With whitish warts and brown, barbed, prickles.
q. Forget-me-not, Myosotis arvensis, (1) Black, (2) Shining.
r. Vervain, Verbena officinalis, (1) Reddish or dark brown, (2) Veined on one side, angled on other.
s. White Vervain, Verbena urticifolia, (1) Reddish or dark brown, (2) Veined on one side, angled on other.
t. Blue Vervain, Verbena hastata, (1) Reddish or dark brown, (2) Veined on one side, angled on other.

PLATE 5.—COMMON WEED SEEDS FOUND IN FARM SEEDS.

(Loaned by Bureau of Plant Industry, U. S. Dept. of Ag.)



Common and Botanical Names. 1=Color. 2=Appearance Under Low-power Lens.

a. Catmint, Nepeta cataria, (1) Reddish or dark brown, (2) Smooth and dull.
b. Healall, Prunella vulgaris, (1) Light to dark brown, (2) Slightly roughened, having a diffused lustre.
c. Rough-leaved toad flax, Elatinoides spuria, (1) Light brown, (2) Wrinkled.
d. Plantain, Plantago major, (1) Greenish, brown or black, (2) Rougbened by slender wavy lines.
e. Bracted plaintain, Plantago aristata, (1) Light or dark brown, (2) Dull.
f. Dwarf plaintain, Plantago virginica, (1) Light brown.
g. Blue field madder, Sherardia arvensis, (1) Dull Brown, (2) With small white hairs.
h. Cleavers, Gallum Aparine, (1) Grey or brown, (2) With hair bearing tubercles.
i. Wild corn salad, Valerianella morrisonii, (1) Brown, (2) Quite smooth.
j. Wild corn salad, Valerianella sp., (1) Brown, (2) Somewhat hairy.
k. Poverty weed, Iva axillaris, (1) Rusty brown, (2) Somewhat roughened.
l. Brown-eyed Susan, Rudbeckia hirta, (1) Black, (2) Having fine vertical ridges.
m. Mayweed, Anthemis cotula, (1) Straw or brown, (2) Having warted ridges.
n. Field camomile, Anthemis arvensis, (1) Whitish, light or dark brown, (2) Vertically grooved.
o. Scentless camomile, Matricaria inodora, (1) Black, (2) Rough and ribbed.
p. Cornflower, Centaurea cyanus, (1) Body of seed, bluish grey, (2) Smooth. Brush of bristles, light reddish yellow.
q. Cat's-ear, Hypochaeris radicata, (1) Body of seed, reddish brown and (2) rough.
r. Oxtongue, Picris echioides, (1) Reddish yellow, (2) Darker transverse lines.
s. Hawkweed picris, Picris hieracioides, (1) Reddish brown, (2) Transverse ridges.
t. Orange picris, Hieracium aurantiacum, (1) Black, (2) Ridged lengthwise; bearing tuft of white bristles.

SPECIAL SAMPLES TESTED FOR PURITY

By a provision of the seed law, the Department is permitted to test seeds for purity, for residents of Pennsylvania, for a fee of 25 cents for each sample. Parties selling or purchasing seeds, therefore, may, by taking advantage of this provision, determine the character of the seeds purchased or offered for sale and whether or not they should be recleaned in order to meet the required standards.

When samples are submitted for examination care should be taken that they fairly represent the lot or shipment from which they are taken otherwise the results of purity tests will be of little or no value. Only those seeds which are named in the law will be tested. When sending special samples of seeds to the Department, therefore, the following directions should be carefully noted:

Amount of Sample:—A three or four ounce sample of the seed, carefully secured and representative of the whole lot or shipment, should be placed in suitable containers, preferably envelopes, which can be tightly closed and sealed.

Charge for Purity Test:—The fee charged for testing is 25 cents and should be submitted with the sample in the form of a check, money order or cash. Stamps will not be accepted. Where only one or two samples are to be submitted, it is preferable to send the fee in cash, which may be inserted in the sample of seed with safety, if the envelopes are carefully sealed.

Address:—The name of the seed and address of the sender should be placed on the package or envelope, in order to identify the sample, and addressed to Bureau of Chemistry, Pennsylvania Department of Agriculture, Box 108, Harrisburg, Pa. In order to avoid errors, especially where several samples are to be tested, a letter should be sent advising of the sending of sample or samples to be tested and the name or kind of seed included.

Of the 61 special samples of seed submitted for purity tests during the year, all but a few were those of red clover and timothy grass, there being 24 samples of each. As special samples are submitted for the purpose of determining whether or not they would meet the required standards or whether they should be recleaned before offered for sale, it is not expected that they would test as high as the official samples of seed representing the various kinds offered for sale. The average purity of the seeds of red clover was 96.89 per cent. and of timothy grass 97.97 per cent., being close to the required standards. As the results of these tests will be of interest they have been tabulated and are included in Table I, which follows.

TABLE I.—RESULTS OF TESTS ON SPECIAL SAMPLES.

Analyst's number.	Name of Seed.	Pure seed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
		Per ct.	Per ct.	Per ct.	Approx.	Approx.
B 1006	Red clover,	95.86	3.40	0.74		
B 1008	Red clover,	93.54	4.69	1.77		
B 1009	Red clover,	95.82	2.49	1.69		
B 1011	Red clover,	95.97	2.53	1.50		
B 1012	Red clover,	99.35	0.38	0.27		
B 1013	Red clover,	98.70	0.85	0.45		
B 1014	Red clover,	98.07	1.74	0.19		
B 1015	Red clover,	95.89	3.50	0.61		
B 1023	Red clover,	97.73	1.74	0.53	1-40,587	1-40,587
B 1024	Red clover,	90.84	4.47	4.69		
B 1026	Red clover,	92.04	3.88	4.08		
B 1027	Red clover,	98.33	0.58	1.09		
B 1028	Red clover,	97.35	2.30	0.35		
B 1029	Red clover,	99.38	0.41	0.21		
B 1030	Red clover,	96.12	3.75	0.13		
B 1034	Red clover,	99.78	0.14	0.08		
B 1035	Red clover,	95.84	2.89	1.27		
B 1041	Red clover,	98.26	1.24	0.50		
B 1042	Red clover,	92.90	6.92	0.18		
B 1043	Red clover,	99.35	0.54	0.11		
B 1044	Red clover,	99.28	0.55	0.17		
B 1045	Red clover,	98.58	1.06	0.36		
B 1065	Red clover,	97.37	2.30	0.33		
B 1066	Red clover,	99.09	0.86	0.05		
	Average,	96.89	2.22	0.89		
B 1052	Alfalfa,	99.68	0.10	0.22		
B 1007	Timothy grass,	99.93	0.05	0.02		
B 1010	Timothy grass,	99.33	0.43	0.24		
B 1016	Timothy grass,	98.05	1.67	0.28		
B 1017	Timothy grass,	98.21	0.95	0.84		
B 1021	Timothy grass,	98.29	0.40	1.31		
B 1022	Timothy grass,	98.72	1.02	0.26		
B 1025	Timothy grass,	87.85	11.34	0.81		
B 1032	Timothy grass,	99.64	0.17	0.19		
B 1033	Timothy grass,	99.83	0.09	0.08		
B 1036	Timothy grass,	97.73	1.72	0.55		
B 1037	Timothy grass,	99.19	0.62	0.19		
B 1038	Timothy grass,	96.87	2.89	0.24		
B 1039	Timothy grass,	99.38	0.31	0.31		
B 1040	Timothy grass,	99.82	0.09	0.09		
B 1054	Timothy grass,	98.74	1.13	0.13		
B 1055	Timothy grass,	95.78	3.31	0.91		
B 1056	Timothy grass,	97.54	1.33	1.13		
B 1057	Timothy grass,	99.41	0.10	0.49		
B 1058	Timothy grass,	99.43	0.23	0.34		
B 1059	Timothy grass,	99.63	0.26	0.11		
B 1060	Timothy grass,	98.21	1.67	0.12		
B 1062	Timothy grass,	99.80	0.10	0.10		
B 1063	Timothy grass,	98.52	1.37	0.11		
B 1064	Timothy grass,	91.29	3.53	5.18		
	Average,	97.97	1.45	0.58		

TABLE I.—RESULTS OF TESTS ON SPECIAL SAMPLES—Concluded.

Analyst's number.	Name of Seed.	Pure seed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thisle.
		Per ct.	Per ct.	Per ct.	Approx.	Approx.
B 1031	Alsike clover,	88.62	10.54	0.84		1-4805
B 1046	Alsike clover,	98.81	0.78	0.41		
B 1047	Alsike clover,	92.20	7.10	0.70		1-2450
	Average,	93.21	6.14	0.65		
B 1061	Timothy and Alsike Mixture, {Timothy,	93.56				
	{Alsike,	5.00	1.23	0.21		
B 1018	White clover,	94.99	4.33	0.68		
B 1053	White clover,	96.80	3.02	0.18		
	Average,	95.90	3.67	0.43		
B 1020	Red top grass,	86.52	0.33	13.15		
B 1048	Red top grass,	92.80	0.46	6.74		
	Average,	89.66	0.39	9.95		
B 1019	Canadian blue grass,	85.37	2.21	12.42		1-2310
B 1050	Kentucky blue grass,	77.77	1.27	20.96		
B 1051	Orchard grass,	80.77	0.35	18.88		
B 1049	Sweet clover,	99.03	0.09	0.88		

AVERAGE PURITY OF OFFICIAL SAMPLES

The results of the tests for purity of the fourteen different kinds of seeds, represented by the official samples received, have been averaged in those cases where more than one sample of each kind was received and tabulated, as shown in Table II, which follows. These results, as will be noted, show the averages were well above the standards of purity required. In those cases where only one or a few samples are included, the results cannot be said to be representative of these kinds of seeds. In the seeds of red clover, alfalfa, timothy grass and alsike clover, where the results of many samples were averaged, the averages of purity were considerably higher than required.

Name of Seed.	Number samples.	Standard of purity.	Pure seed.	Foreign seed.	Inert matter.
		Per ct.	Per ct.	Per ct.	Per ct.
Red clover,	49	97	98.35	1.21	0.44
Alfalfa,	12	97	99.78	0.09	0.13
Timothy grass,	37	97	99.38	0.30	0.32
Barley,	1	97	98.85	1.02	0.13
Wheat,	3	97	99.88	0.09	0.03
Rye,	2	97	99.81	0.15	0.04
Alsike clover,	34	95	97.03	2.58	0.39
Perennial rye grass,	1	95	99.71	0.29	0.00
German millet,	1	95	99.24	0.56	0.20
White clover,	1	90	93.89	5.55	0.56
Redtop grass (hulled),	4	85	91.40	0.78	7.82
Redtop grass (unhulled),	1	75	76.56	0.18	23.26
Orchard grass,	2	75	79.07	1.18	19.75
Kentucky blue grass,	2	75	75.28	0.91	23.81
Total,	150				

RESULTS OF INSPECTION

The official samples of agricultural seeds obtained during the year by the Special Agents of the Department numbered 150 and included 14 different kinds. Each sample was carefully examined and determinations made for the percentages of "Pure Seed," "Foreign Seed" and "Inert Matter" and the presence or absence of dodder and Canada thistle noted. The percentage of pure seed represents the amount of seed contained in the sample of the kind for which the seed is sold. The foreign seed included the seeds present which differ from those indicated by the name or kind of seed under examination. The inert matter includes all dirt, stones, broken stems and less than halves of the seed classified as pure and foreign.

Of the total number received there were 10 samples which, upon being tested, failed to meet the required standards. The majority of these, however, considerably exceeded the required standards. The greater portion of the samples included the seeds of red clover, alfalfa, timothy grass and alsike clover. There were 49 samples of red clover which varied in their purity from 87.93 per cent. to 99.76 per cent. averaging 98.35 per cent. and 4 tested under the standard of 97.00 per cent. There were 13 samples representing shipments which were guaranteed from 98.00 per cent. to 99.50 per cent. pure, being in excess of the standard of 97.00 per cent., and 6 of these tested slightly less than the guarantees claimed, although they exceeded the standard, thus indicating that these seedsmen were offering seed of a higher degree of purity than specified by the Law.

The seeds of dodder were found present in 5 samples in the approximate proportion of 1 seed in 2,190 to 1 seed in 47,459. Two of these cases, as shown in the table, contained this noxious weed seed in a greater proportion than 1 seed in 3,000, as permitted by the Seed Law.

Alfalfa was represented by 12 samples, all of which showed purity tests in excess of the standard, varying from 99.58 per cent. to 99.94 per cent. and averaging 99.78 per cent. pure. Three of these were guaranteed 99.50 per cent., which, upon being tested, exceeded the guarantees as well as exceeding the requirements.

The samples of timothy grass numbered 37, all of which exceeded the standard of 97.00 per cent., varying from 97.41 per cent. to 99.88 per cent., averaging 99.38 per cent pure. There were 9 samples obtained from lots which were guaranteed from 98.00 per cent. to 99.85 per cent. pure and only 1 of these tested less than claimed.

There were 34 samples of alsike clover received and only 3 of these tested less than the standard of 95.00 per cent. The percentages of purity were found to vary from 93.02 per cent. to 99.75 per cent., averaging 97.03 per cent. Seven of the lot sampled were guaranteed to be from 95.00 per cent. to 98.87 per cent. pure and 3 of these failed to meet these claims. In 12 samples, Canada thistle was found present in the approximate proportion of 1 seed in 4,300 to 1 seed in 228,000.

The remaining seeds received and tested for purity included barley, wheat, rye, perennial rye grass, German millet, white clover, red top grass (hulled) and (unhulled), orchard grass and Kentucky blue grass, of which only a few samples were secured and all of which exceeded the required standards of purity. In the following table will be found the detailed results of purity tests on each sample examined, together with the average percentages of purity of each kind of seed where 2 or more were received.

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1918.

Analyst's number.	Name of Seed and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
			Per ct.	Per ct.	Per ct.	Per ct.	Approx.	Approx.
	RED CLOVER. THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A1067	Insurance,	M. C. Dietz & Son, Mechanicsburg,	99.15	99.25	0.40	0.45		
A1141	Insurance Brand Medium,	Doylestown Poultry Supply Co., Doylestown,	99.31		0.52	0.37		
A1089	Medium,	Heebner & Kriebel, West Point,	99.00	99.25	0.62	0.38		
A1068	Red Clover,	M. C. Dietz & Son, Mechanicsburg,	99.75		0.22	0.03		
	BLAMBERG BROTHERS, INC., BALTIMORE, MD.							
A1064	Red Clover,	M. C. Dietz & Son, Mechanicsburg,	99.55	99.50	0.35	0.10		
A1071	Red Clover,	W. S. Stuart, Carlisle,	99.38	98.45	0.38	0.24		
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A1128	Buff Brand,	Spanogle-Yeager Milling Co., Lewistown,	99.36	99.50	0.46	0.18		
A1127	Choice,	Spanogle-Yeager Milling Co., Lewistown,	97.17	98.00	2.22	0.61		
A1166	Red Clover,	Saylor & Woy, Somerset,	98.95	98.95	0.71	0.34		
A1126	Sappling,	Spanogle-Yeager Milling Co., Lewistown,	99.46	99.47	0.20	0.34		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A1156	Globe Brand,	John G. Emert, Somerset,	99.32		0.49	0.19		
A1085	Globe Brand Medium,	S. S. Detweiler, Quakertown,	99.70		0.24	0.06		
A1080	Pine Tree,	S. E. Shenk & Sons, Newville,	99.55		0.37	0.08		
A1073	Pine Tree,	W. S. Stuart, Carlisle,	99.12		0.66	0.22		
A1133	Pine Tree Brand Mammoth,	Steininger Brothers, Middleburg,	99.12		0.75	0.13		
A1079	Pine Tree Medium,		98.56		1.13	0.31		
	THE CRUMBAUGH-KUEHN CO., TOLEDO, OHIO.							
A1168	Mammoth,	A. T. Sprankle, DuBois,	98.58		0.95	0.47		
A1169	Medium,	A. T. Sprankle, DuBois,	98.95		0.60	0.45		
		L. L. Rice, Carlisle,						

	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A1159	Ace Brand,	H. C. Beerits' Sons, Somerset,	96.94		2.81	0.25	1-11,198	
A1161	Fancy Re-cleaned,	H. C. Beerits' Sons, Somerset,	96.90		2.65	0.45	1-38,318	
	H. W. DOUGHTEN, INC., MOORESTOWN, N. J.							
A1092	Liberty Brand Medium,	L. W. Mattern, West Point,	99.08	99.50	0.63	0.29		
A1087	Liberty Brand Medium,	Allen K. Smith, Quakertown,	99.43	99.50	0.42	0.15		
	THE KELLY CO., CLEVELAND, OHIO.							
A1056	Medium,	Morrisdale Grain & Feed Co., Morrisdale,	98.60	98.00	1.09	0.31		
	THE PHILADELPHIA SEED CO., INC., PHILADELPHIA, PA.							
A1136	Fancy,	Wm. M. Atkinson, McVeytown,	97.85		1.66	0.49		
A1144	Quaker Brand Medium,	R. L. Clymer, Doylestown,	99.53	99.30	0.36	0.11		
A1150	Quaker Brand Medium,	A. B. Godshall, Telford,	99.50		0.21	0.29		
	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A1076	Red Clover,	L. L. Rice, Carlisle,	99.23	98.75	0.45	0.32		
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1118	Medium,	Scobie & Parker Co., Pittsburgh,	98.36		1.09	0.55		
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1096	Special Medium,	The I. W. Scott Co., Pittsburgh,	99.76		0.24	0.00		
	S. E. SHENK & SONS, NEWVILLE, PA.							
A1083	Red Clover,	S. E. Shenk & Sons, Newville,	87.93		6.82	5.25	1-47,459	
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A1052	Are Brand Mammoth,	W. W. Davidson, Ellwood City,	97.47		2.09	0.44		
A1043	Are Brand Mammoth,	Dodds & Garrett, Beaver Falls,	98.44		1.34	0.22		
A1170	Are Brand Mammoth,	A. T. Sprankle, DuBois,	98.61		1.15	0.24		
A1054	Are Brand Medium,	W. W. Davidson, Ellwood City,	98.53		1.18	0.29		
A1042	Are Brand Medium,	Dodds & Garrett, Beaver Falls,	98.84		1.00	1.16		
A1167	Are Brand Medium,	A. T. Sprankle, DuBois,	98.54		1.21	0.25		
A1173	Areo Brand Medium,	C. F. Hopkins, Townville,	98.14		1.32	0.54		
A1035	Honor Brand Mammoth,	William Gates Estate, Kittanning,	99.55		0.34	0.11		
A1037	Honor Brand Medium,	William Gates Estate, Kittanning,	98.40		1.56	0.04		
A1094	Selected Medium,	Estate of George S. Snyder, Hatfield,	98.64		1.18	0.18		
	N. WERTHEIMER & SONS, LIGONIER, IND.							
A1123	Medium,	John G. Simpson, Huntingdon,	99.30		0.50	0.20		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1918—Continued.

Analyst's number.	Name of Seed and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.		Per ct.	Per ct.	Per ct.	Per ct.	Approx.	Approx.
A1044	Imperator Mammoth,	J. G. Allen, Beaver Falls,	97.15	-------	2.00	0.85	-------	-------
A1045	Imperator Medium,	J. G. Allen, Beaver Falls,	97.02	-------	2.06	0.92	-------	-------
A1032	Mammoth,	H. J. Klingler & Co., Butler,	97.50	-------	2.11	0.39	-------	-------
A1029	Medium,	H. J. Klingler & Co., Butler,	97.01	-------	2.49	0.50	-------	-------
A1149	Pan-American Brand Medium,	Henry S. Beidler, Doylestown,	98.04	-------	1.60	0.36	-------	-------
A1047	Pan-American Mammoth,	M. W. McCandless, Beaver Falls,	97.05	-------	2.23	0.72	1-2190	-------
A1140	Pan-American,	Lewistown Ice & Storage Co., Lewistown,	96.95	-------	2.31	0.74	1-2625	-------
A1049	Pan-American,	M. W. McCandless, Beaver Falls,	97.11	-------	2.14	0.75	-------	-------
		Average,	98.35	-------	1.21	0.44	-------	-------
	ALFALFA.							
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A1069	Fancy,	M. C. Dietz & Son, Mechanicsburg,	99.90	99.50	0.04	0.06	-------	-------
	BLAMBERG BROTHERS, INC., BALTIMORE, MD.							
A1075	Alfalfa,	W. S. Stuart, Carlisle,	99.88	99.50	0.00	0.12	-------	-------
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A1154	Globe Brand,	John G. Emert, Somerset,	99.82	-------	0.11	0.07	-------	-------
	HOLMES SEED CO., HARRISBURG, PA.							
A1063	Grim,	M. C. Dietz & Son, Mechanicsburg,	99.72	-------	0.05	0.23	-------	-------
	THE PHILADELPHIA SEED CO., PHILADELPHIA, PA.							
A1125	Alfalfa,	C. H. Miller Hardware Co., Huntingdon,	99.58	-------	0.32	0.10	-------	-------

	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A1077	American,	L. L. Rice, Carlisle,	99.85	99.60	0.06	0.09		
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1117	Alfalfa,	Scobie & Parker Co., Pittsburgh,	99.78		0.22	0.00		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A1059	Alfalfa,	J. W. Miller, Mechanicsburg,	99.61		0.11	0.28		
A1036	Honor Brand,	William Gates Estate, Kittanning,	99.61		0.02	0.37		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A1065	Eureka,	M. C. Dietz & Son, Mechanicsburg,	99.94		0.01	0.05		
A1138	Eureka,	Lewistown Ice & Storage Co., Lewistown,	99.80		0.10	0.10		
A1130	Eureka,	Mifflin County Hardware Co., Lewistown,	99.83		0.09	0.08		
	TIMOTHY GRASS.	Average,	99.78		0.09	0.13		
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A1143	Insurance Brand,	Doylestown Poultry & Supply Co., Doylestown,	99.43		0.29	0.28		
A1062	Timothy Grass,	M. C. Dietz & Son, Mechanicsburg,	99.84	99.85	0.08	0.08		
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A1164	Timothy Grass,	Saylor & Woy, Somerset,	99.32	99.25	0.25	0.43		
A1081	Timothy Grass,	S. E. Shenk & Sons, Newville,	99.83	99.65	0.02	0.15		
	CRAVER-DICKINSON SEED CO., BUFFALO, N. Y.							
A1132	Pine Tree Brand,	Steininger Brothers, Middleburg,	99.86		0.13	0.01		
A1070	Timothy Grass,	W. S. Stuart, Carlisle,	99.83		0.01	0.16		
	CUMBERLAND SEED CO., CUMBERLAND, MD.							
A1162	Extra Fancy,	Meyersdale Hardware Co., Meyersdale,	99.67	99.50	0.08	0.25		
	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A1157	No. 1 Recleaned,	H. C. Beerits' Sons, Somerset,	98.41		0.63	0.96		
A1158	Pine Tee Brand,	H. C. Beerits' Sons, Somerset,	99.69		0.06	0.25		
A1034	Pine Tree Brand,	J. A. Gault & Co., Kittanning,	99.66		0.12	0.22		
A1050	Pine Tree Brand,	A. F. Grine, Beaver,	99.67		0.12	0.21		
	H. W. DOUGHTEN, INC., MOORESTOWN, N. J.							
A1086	Timothy Grass,	S. S. Detweiler, Quakertown,	99.60		0.12	0.28		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1918—Continued.

Analyst's number.	Name of Seed and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
			Per ct.	Per ct.	Per ct.	Per ct.	Approx.	Approx.
	O. GANDY & CO., SOUTH WHITELY, IND.							
A1174	Special "G" Brand,	C. F. Hopkins, Townville,	97.41	98.50	0.81	1.78		
A1172	Special "G" Brand,	P. J. Oesterling & Son, Butler,	98.83	98.50	0.56	0.61		
	RUSSELL JAY, CLEARFIELD, PA.							
A1058	Timothy Grass,	J. T. Murphy, Clearfield,	99.11		0.18	0.71		
	THE KELLY CO., CLEVELAND, OHIO.							
A1055	No. 1,	Morrisdale Grain & Feed Co., Morrisdale,	98.29	98.00	1.09	0.62		
A1057	No. 1,	Morrisdale Grain & Feed Co., Morrisdale,	99.39	98.50	0.49	0.12		
	THE PHILADELPHIA SEED CO., PHILADELPHIA, PA.							
A1124	Puritan Brand,	C. H. Miller Hardware Co., Huntingdon,	98.64		0.84	0.52		
A1095	Puritan Brand,	Estate of George S. Snyder, Hatfield,	99.81		0.07	0.12		
A1146	Quaker Brand,	R. L. Clymer, Doylestown,	99.71		0.14	0.15		
A1152	Quaker Brand,	A. B. Godshall, Telford,	99.77		0.02	0.21		
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1120	Fancy,	Seobie & Parker Co., Pittsburgh,	99.76		0.07	0.17		
A1122	Prime,	Seobie & Parker Co., Pittsburgh,	97.83		1.15	1.02		
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1106	Special,	The I. W. Scott Co., Pittsburgh,	99.88		0.01	0.11		
A1099	XXX Timothy,	The I. W. Scott Co., Pittsburgh,	99.66		0.33	0.01		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A1040	Liberty Brand,	Dodds & Garrett, Beaver Falls,	99.75		0.07	0.18		

A1038	Liberty Brand,	William Gates Estate, Kittanning,	99.63	99.50	0.25	0.12		
A1033	Liberty Brand,	C. H. Miller & Co., Butler,	99.80		0.01	0.19		
A1135	Timothy Grass,	Wm. M. Atkinson, McVeytown,	98.57		1.14	0.29		
A1053	Timothy Grass,	W. W. Davidson & Son, Ellwood City,	99.70		0.17	0.13		
A1180	Timothy Grass,	Wm. H. Dunlap, Jr., Canonsburg,	99.45		0.23	0.32		
A1175	Timothy Grass,	C. F. Hopkins, Townville,	99.65		0.25	0.10		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A1148	Pan-American,	Henry S. Beidler, Doylestown,	99.17		0.57	0.26		
A1129	Pan-American,	Mifflin County Hardware Co., Lewistown,	99.83		0.15	0.02		
A1178	Pan-American,	E. E. Wentz, Lock Haven,	99.43		0.23	0.34		
	UNKNOWN.							
A1153	Timothy Grass,	John G. Emert, Somerset,	99.72		0.15	0.13		
A1031	Timothy Grass,	H. J. Klingler & Co., Butler,	99.55		0.24	0.21		
	BARLEY.							
	THE I. W. SCOTT CO., PITTSBURGH, PA.	Average,	99.38		0.30	0.32		
A1103	Six Row,	The I. W. Scott Co., Pittsburgh,	98.85		1.02	0.13		
	WHEAT.							
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1115	Red Wave,	Scobie & Parker Co., Pittsburgh,	99.79		0.21	0.00		
A1121	White,	Scobie & Parker Co., Pittsburgh,	99.95		0.00	0.05		
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1101	Marques Spring,	The I. W. Scott Co., Pittsburgh,	99.90		0.06	0.04		
	RYE.							
	SCOBIE & PARKER CO., PITTSBURGH, PA.	Average,	99.88		0.09	0.03		
A1113	Spring,	Scobie & Parker Co., Pittsburgh,	99.81		0.11	0.08		
A1114	Winter,	Scobie & Parker Co., Pittsburgh,	99.81		0.18	0.01		
	ALSIKE CLOVER.							
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.	Average,	99.81		0.15	0.04		
A1142	Alpha Brand,	Doylestown Poultry Supply Co., Doylestown,	95.69		3.91	0.40		1-23,400
A1090	Alsike Clover,	Heebner & Kriebel, West Point,	97.66	98.00	2.06	0.28		1-20,428
A1061	Insurance,	Jacob H. Koller, Mechanicsburg,	98.45	98.00	0.90	0.65		
	JOHN, J. BUFFINGTON & CO., BALTIMORE, MD.							
A1165	Alsike Clover,	Saylor & Woy, Somerset,	96.34	95.00	3.54	0.12		1-7,892

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1918—Concluded.

Analyst's number.	Name of Seed and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A1084	Globe Brand,	S. S. Detweiler, Quakertown,	97.24	-------	2.55	0.21	-------	-------
A1155	Globe Brand,	John G. Emert, Somerset,	97.03	-------	2.64	0.33	-------	-------
A1072	Pine Tree,	W. S. Stuart, Carlisle,	96.89	-------	2.90	0.21	-------	-------
	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A1160	Alsike Clover,	H. C. Beerits' Sons, Somerset,	94.51	-------	5.31	0.18	-------	1-109,815
	H. W. DOUGHTEN, INC., MOORESTOWN, N. J.							
A1091	Liberty Brand,	L. W. Mattern, West Point,	95.02	97.00	6.80	0.18	-------	1-228,000
A1088	Liberty Brand,	Allen K. Smith, Quakertown,	97.51	98.00	1.97	0.52	-------	1-4,000
	O. GANDY & CO., SOUTH WHITLEY, IND.							
A1171	Special Choice "G",	P. J. Oesterling & Son, Butler,	98.45	98.00	0.41	1.14	-------	-------
	THE PHILADELPHIA SEED CO., INC., PHILADELPHIA, PA.							
A1137	Fancy,	Wm. M. Atkinson, McVeytown,	95.03	-------	4.15	0.82	-------	-------
A1151	Puritan Brand,	A. B. Godshall, Telford,	96.22	-------	3.21	0.57	-------	-------
A1145	Quaker Brand,	R. L. Clymer, Doylestown,	96.93	-------	3.05	0.02	-------	-------
	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A1078	Alsike Clover,	L. L. Rice, Carlisle,	98.88	98.87	0.64	0.48	-------	-------
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1116	Alsike Clover,	Scobie & Parker Co., Pittsburgh,	94.69	-------	5.10	0.21	-------	1-4,300

			Per ct.	Per ct.	Per ct.	Per ct.	Approx.	Approx.
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1105	A. A. A.,	The I. W. Scott Co., Pittsburgh,	97.72		1.97	0.31		1-21,776
A1098	Alsike Clover,	The I. W. Scott Co., Pittsburgh,	99.75		0.22	0.03		
A1102	Special,	The I. W. Scott Co., Pittsburgh,	99.48		0.48	0.04		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A1041	Alsike Clover,	Dodds & Garrett, Beaver Falls,	98.22		1.01	0.77		
A1177	Alsike Clover,	C. F. Hopkins, Townville,	97.85		1.92	0.23		
A1028	Alsike Clover,	H. J. Klingler & Co., Butler,	97.96		1.53	0.51		
A1060	Alsike Clover,	J. W. Miller, Mechanicsburg,	98.70		1.07	0.23		
A1051	Arc Brand,	W. W. Davidson & Son, Ellwood City,	97.42		2.03	0.55		
A1093	Arc Brand,	Estate of George S. Snyder, Hatfield,	97.26		2.20	0.54		
A1039	Honor Brand,	William Gates Estate, Kittanning,	97.90		1.71	0.39		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A1030	Alsike Clover,	H. J. Klingler & Co., Butler,	97.00		2.23	0.77		
A1046	Pan-American,	J. G. Allen, Beaver Falls,	95.31		4.58	0.11		
A1147	Pan-American,	Henry S. Beidler, Doylestown,	96.49		3.22	0.29		1-16,509
A1066	Pan-American,	M. C. Dietz & Son, Mechanicsburg,	95.26		4.55	0.19		
A1139	Pan-American,	Lewistown Ice & Storage Co., Lewistown,	95.72		3.79	0.49		1-7,093
A1048	Pan-American,	M. W. McCandless, Beaver Falls,	97.41		2.20	0.39		1-1,550
A1082	Pan-American,	S. E. Shenk & Sons, Newville,	98.26		0.76	0.98		
A1074	Pan-American,	W. S. Stuart, Carlisle,	96.77		3.04	0.19		1-40,130
		Average,	97.03		2.58	0.39		
	PERENNIAL RYE GRASS.							
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1119	Perennial Rye Grass,	Scobie & Parker Co., Pittsburgh,	99.71		0.29	0.00		
	GERMAN MILLET.							
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1104	Special,	The I. W. Scott Co., Pittsburgh,	99.24		0.56	0.20		
	WHITE CLOVER.							
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1097	Special,	The I. W. Scott Co., Pittsburgh,	93.89		5.55	0.56		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1918—Concluded.

Analyst's number.	Name of Seed and Nname and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	RED TOP GRASS (HULLED).							
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A1163	Red Top Grass.	Saylor & Woy, Somerset,	96.44	97.00	0.32	3.24	----------	----------
	O. GANDY & CO., SOUTH WHITLEY, IND.							
A1176	Red Top Grass,	C. F. Hopkins, Townville,	96.19	--------	1.38	2.43	----------	----------
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1110	Fancy,	Scobie & Parker Co., Pittsburgh,	82.35	82.00	0.67	16.98	----------	----------
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1100	Fancy,	The I. W. Scott Co., Pittsburgh,	90.60	--------	0.77	8.63	----------	----------
	RED TOP GRASS (UNHULLED).	Average,	91.40	--------	0.78	7.82	----------	----------
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1112	Red Top Grass,	Scobie & Parker Co., Pittsburgh,	76.56	--------	0.18	23.26	----------	----------
	ORCHARD GRASS.							
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1111	Orchard Grass.	Scobie & Parker Co., Pittsburgh,	74.15	--------	1.61	24.24	----------	----------

	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1108	Special,	The I. W. Scott Co., Pittsburgh,	83.98		0.75	15.27		
	KENTUCKY BLUE GRASS.	Average,	79.07		1.18	19.75		
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A1109	Fancy,	Scobie & Parker Co., Pittsburgh,	70.13		0.45	29.42		
	THE I. W. SCOTT CO., PITTSBURGH, PA.							
A1107	Fancy,	The I. W. Scott Co., Pittsburgh,	80.43		1.37	18.20		
		Average,	75.28		0.91	23.81		